

REMARKS

Applicants have neither amended nor cancelled any claims in this response. Thus, Applicants submit that claims 1, 7, 11 to 14, 19 to 21, 25 to 27, 29, 33, 34, 37, and 41 to 44 remain pending in this patent application. Applicants now address each and every point raised by the Examiner in the above-identified final Office action as follows:

1. Claim Rejections – 35 U.S.C. § 112 – Claims 1, 14, 25, 33 and 43

Claims 1, 14, 25, 33 and 43 have been rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Applicants submit that the invention as recited in these claims is properly supported by the detailed description of this patent application for the reasons presented below.

To satisfy the written description requirement under the first paragraph of 35 U.S.C. § 112, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention (see MPEP § 2163(I)). This possession may be shown in any number of ways. For example, for newly added claim limitations, the MPEP requires that the specification provide support through express, implicit, or inherent disclosure (see MPEP § 2163(I)(B)). To determine whether the specification provides express, implicit, or inherent disclosure, the MPEP dictates that the factual inquiry to be used is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, Applicants were in possession of the invention as now claimed (see *Id.*). Applicants respectfully submit that such reasonable clarity is present in the specification.

Here, the Examiner alleges that the claim features that there is no support for the feature that the cermet composition “consists of two phases” (as recited in claims 1, 14 and 33) and “consists of three phases” (claims 25 and 33). However, per the above, Applicants respectfully note that this is not the standard for compliance with the written description requirement. The specification clearly discusses that the primary purpose and intent of the invention is to provide cermet compositions having a low coefficient of thermal expansion (CTE), which purpose is

achieved by carefully controlling the CTEs of the specific material phases used to form the composition. As such, while the present application does not explicitly use the word “consisting of” with reference to the material phases used to form the low CTE cermet composition, Applicants respectfully submit that a person of ordinary skill in the art would readily appreciate that limiting the cermet composition to two phases (in one invention embodiment) or three phases (in another invention embodiment) was contemplated in light of the clear support discussed above.

Applicants disclose a first invention embodiment comprising only two material phases, i.e., a binder alloy phase and a WC second phase, where there are no other material phases present as supported in the detailed description, in FIG. 2 (where the CTEs of low CTE cermet compositions are compared with the content of the low CTE binder alloy), and in Example No. 1. In such first invention embodiment, the only way that is disclosed of controlling the CTE of the resulting cermet composition is by carefully matching the CTEs of the only two material phases present. Thus, Applicants submit that the invention as recited in claims 1, 14 and 33, consisting of only two material phases, is well supported in the written description.

Applicants disclose a second invention embodiment comprising only three material phases, i.e., a WC phase, a binder alloy phase for combining with the WC phase to form particles, and a further binder phase for surrounding the particles. There are no other material phases disclosed for this second invention embodiment, and this fact is supported in the disclosure and in Example Nos. 3 and 4. In such second invention embodiment, the only way that is disclosed of controlling the CTE of the resulting cermet composition is by carefully matching the CTEs of the only three two material phases. Thus, the invention as recited in claims 25 and 43, consisting of only three material phases, is well supported in the written description.

In view of the clear intention of the invention, as expressed and/or implied in the detailed description, relevant Examples, and as illustrated in the relevant figures, Applicants submit that the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, that Applicants were in possession of the invention as now claimed, i.e., as consisting of two material phases (for a first invention embodiment), and as consisting of three

material phases (for a second invention embodiment). Applicants, therefore, submit that its invention as recited in the noted claims is properly supported by the specification and, in view thereof, respectfully request that the rejection of claims 1, 14, 25, 33 and 43 under 35 U.S.C. § 112 be reconsidered and withdrawn.

2. Claim Rejections – 35 U.S.C. § 103 – Claims 1, 7, 11, 12, 14, and 19-21

Claims 1, 7, 11, 12, 14, and 19-21 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Japanese Patent No. 05-156301 (“JP‘301”) as evidenced by U.S. Patent No. 5,934,542 to Nakamura et al. (“Nakamura”) and in view of Japanese Patent No.10-284547 (“JP‘547”). Applicants submit that the combination of the references noted by the examiner fails to render obvious the invention as recited in the rejected claims for the following reasons.

JP ‘301 discloses a sintered article formed by combining an Invar or Super Invar powder with a ceramic powder that may be a carbide. As noted by the Examiner, JP ‘301 does not disclose the use of WC. Additionally, the Super Invar powder disclosed in JP ‘301 (as set forth in Table 1) has a material composition that includes materials in addition to those within the scope of Applicants’ claims (in view of the “consisting of” language). For example, Table 1 lists the Super Invar powder as including Si, P, S, Cr, and Mo, which elements are not present in Applicants’ claimed binder alloy. Thus, JP ‘301 fails to disclose or suggest a cermet composition including both a WC phase, and a binder alloy phase “consisting of” Fe, Co, Mn, C and Ni. Still further, JP ‘301 fails to disclose or remotely suggest a binder alloying including the specifically claimed Co content (10 to 30 weight percent Co).

Nakamura discloses a high-strength bonding tool comprising a shank. In one invention embodiment, the tool comprises a polycrystalline diamond-coated cemented carbide as the tool material. The shank material for this particular embodiment may include metals, alloys, and cemented carbide particles that include W, or Invar and Super Invar alloys. Nakamura does not disclose that the shank material “consist of” only two material phases; namely, a WC phase and a

binder alloy phase. Nakamura does disclose the Super Invar alloy as having the following compositions: 64% Fe; 31% Ni, 5% Co, 0.3 to 0.4% Mn, and 0.07% C.

As noted above, Nakamura does not disclose a cermet composition “consisting of” only of a WC phase and a binder alloy phase, i.e. Nakamura does not preclude the existence of additional material phases. Further, the Super Invar material disclosed in Nakamura includes an amount of Co (5%) that is outside of the range (10 to 30%) recited in Applicants’ claims. Thus, like JP `310, Nakamura fails to disclose or remotely suggest a binder alloy having the particular Co content (10 to 30 weight percent) as recited in the pending claims.

Thus, combining JP `301 with Nakamura at most would yield a composition comprising WC as one phase (adding WC from Nakamura to replace the ceramic powder in JP `310) with the Super Invar (from Nakamura) as another phase. However, Applicants do not believe that one skilled in the art can properly ignore and not include the other elements present in the Super Invar of JP `301 (i.e., Si, P, S, Cr, and Mo), as there is no suggestion to do so. Thus, Applicants submit that one skilled in the art would not be motivated to arbitrarily pick and choose and intentionally avoid these elements, and that doing so would only be motivated by an improper hindsight reconstruction based on the current knowledge of Applicants’ claimed invention. Further, the combination of JP `301 with Nakamura does not provide a cermet composition having a binder alloy phase that includes 10 to 30 percent by weight Co. This is neither disclosed nor suggested in either reference, so their combination cannot operate to provide motivation or suggestion for such claim feature that is missing in each.

JP `547 discloses a contact tool having a main body tool joined to a shank by a soldering material. The main body tool has a base made from 90 to 98 percent by weight WC with Co. The Examiner relies on the further combination of JP `547 as motivation for replacing the ceramic powder of JP `301 with WC, and replacing the Co in JP `547 with the Super Invar disclosed in JP `301 and/or Nakamura.

However, JP `547 discloses that the main body also includes 10 to 25 percent by weight Cr (which is not present in Applicants’ claimed binder alloy). Thus, it is unlikely that one skilled in the art would be motivated to not additionally include this element in the binder alloy of the

combination. As noted above, doing so would be an unsupported picking and choosing between references that can only be supported by an improper hindsight reconstruction based on current the knowledge of Applicants' claimed invention. Further, none of the three references disclose or remotely suggest the claim feature of the binder alloy comprising 10 to 30 percent by weight Co, which feature is present in each of Applicants' independent claims 1 and 14.

Thus, for all of the reasons presented above, Applicants submit that one skilled in the art taking JP `310, Nakamura, and JP `547 would not be motivated to make its low CTE cermet composition as recited in independent claims 1 and 14, and for this reason the invention as recited in these claims is not obvious and is properly patentable over these combined references. Applicants, therefore, respectfully request that the rejection of independent claims 1 and 14, and the noted claims depending respectively therefrom, under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

3. Claim Rejections – 35 U.S.C. § 103 – Claims 13, 25-27, 29, 33, 34, 37, and 41-44

Claims 13, 25-27, 29, 33, 34, 37, and 41-44 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Publication No. 2006/0222853 to Sue et al. ("PG'853") in view of JP'301 as evidenced by US'542 and in view of JP'547. Applicants submit that independent claim 1 is properly patentable over the combination of the three references (JP `310, Nakamura, and JP `547) for the reasons presented above in Paragraph 2 of this response. Independent claims 25, 33 and 43 each include the same claim feature noted above in Paragraph 2 (i.e., the binder alloy comprising 10 to 30 percent by weight Co) that is neither disclosed nor suggested in any of the three references (JP `310, Nakamura, and JP `547), and Applicants submit that these independent claims are properly patentable over these three references for the same reasons presented above with respect to independent claims 1 and 14.

Sue is relied upon by the examiner, and is further combined with the other three references, for its disclosure of a roller cone rock bit, inserts in the rock bit, WC combined with alloys to form an insert material, and a material microstructure of WC-Co surrounded by a further ductile material such as Co. However, Sue fails to disclose a binder alloy having the

specific material content recited in Applicants' independent claims 1, 25, 33 and 43 (consisting of only Fe, Ni, Co, Mn, and C). Further, like the other three references, Sue fails to disclose that such specific binder alloy includes 10 to 30 percent by weight Co.

Thus, Applicants submit that one skilled in the art taking Sue in combination with the remaining three references would not be motivated to make its low CTE cermet composition comprising the binder alloy having the specifically recited amount of Co, which is neither disclosed nor suggested in any of the references. For these reasons, Applicants submit that its cermet composition is not obvious and is properly patentable over the cited combination of the four references. Applicants, therefore respectfully request that the rejection of independent claims 1, 25, 33 and 43, and the noted claims depending respectively therefrom, under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

4. Request for Examiner and Supervisory Examiner Interview

In the event that the Examiner not agree with Applicants' position, that its invention as recited in the pending claims is properly patentable, Applicants respectfully request that the Examiner please contact Applicants' below-designated patent attorney for the purpose of scheduling a telephone interview, with the presence of the supervisory examiner requested, for purposes of further discussing this matter.

5. Conclusion

For the reasons presented above, Applicants respectfully request that the rejections of the claims under 35 U.S.C. § 112 and 103 be reconsidered and withdrawn, and that the claims pending in this patent application be passed to allowance.

If after considering this response should the Examiner conclude that this patent application is not in proper condition for allowance, Applicants respectfully request that the Examiner contact its below-identified patent attorney to discuss the same.

The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply. The Commissioner is authorized to charge any underpayment of fees, and to credit any overpayment of fees due, including extension of time fees, to Deposit Account No. 50-3683.

Respectfully submitted,

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